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Are Congress and the Executive Branch Fiddling While Rome Burns? The Impact of Fire as a Hazardous-Fuels Reduction Tool on Clean Air and Communities in the Sierra Nevada

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O for a Muse of fire, that would ascend the brightest heaven of invention.[1]

Federal land managers have made the decision to allow fires, whether the result of a lightning strike high in the Sierra Nevada Mountains or the decision to ignite a prescribed fire, to burn under "controlled conditions" on public lands while a legal, political, and social debate about the practice ensues. The outcome of this debate could jeopardize the future use of fire tools by federal land-management agencies[2] to reduce the down and dead debris that has accumulated on the landscape over the past century. These agencies must also balance their duty under the Clean Air Act (CAA) to minimize the adverse effect of smoke on human health with Congress' expectation of a reduction in the amount of fuels on federal lands. These conflicting federal expectations, clean air and reduced fuel levels, are magnified by the fact that the most opportune time for wildfires, the summer months, coincides with the period when noxious gases are more easily trapped in the atmosphere. In California, the result is air quality that meets neither CAA nor the California Air Resources Board's standards to protect human health and welfare.

There is a need to find a solution to this increasing conflict, particularly in California, where the catastrophic fires of 2003 are a recent memory. At the same time that human impact on the environment is increasing, the expectation to live in a world free from disaster is also increasing. This article provides an overview of the use of prescribed and wildland-use fires on federal lands, Congress' expectations of federal land managers to reduce the level of fuel loads on these public lands, an overview of the pertinent sections of the CAA that relate to smoke associated with fires, and the conflicts between CAA standards and the public's desire to not be adversely affected by wildfires. I also provide a recommended course of action to address the need to reduce the enormous fuel loads on federal lands, while optimizing the use of fire as a tool to reduce these fuel loads where appropriate. Finally, I propose three fundamental changes that need to occur to

[1] WILLIAM SHAKESPEARE, THE LIFE OF HENRY THE FIFTH prologue.

[2] These include the Forest Service, the National Park Service, the Bureau of Land Management, the Bureau of Indian Affairs, and the U.S. Fish and Wildlife Service.

better address the health and safety of individuals who live in areas that could be devastated by wildfire and those downwind from the adverse effects of smoke: (1) a better understanding and acceptance by Congress of "weighted acreages," (2) a "Wildland Fire Use and Grant Program" using CAA funds procured from fines levied for violations of the CAA, and (3) the imposition of a local tax scheme to ensure homeowners take steps to reduce the dangers catastrophic fires pose to their homes.

While the focus of this Article's analyses relates to the management of federal lands in the Sierra Nevada Mountain range,[3] the application of the findings are applicable nationwide where federal land managers seek to balance fuel-load reduction with CAA considerations.

I

THE MANAGEMENT OF FIRE ON FEDERAL LANDS

> *[T]he young U.S. Forest Service had the memory of the conflagrations spliced into its institutional genes, shaped as profoundly by the Great Fires as modern China by the Long March. Not for more than 30 years . . . would the nation's leading agency for administering wildlands consider fire as anything but a hostile force to be fought to the death.*[4]

The management of fire on federal lands, both through suppression tactics and as a tool, has evolved over the past one hundred years. The effects of an aggressive federal firefighting force have, according to some, resulted in an extensive increase in forest biomass. This buildup has caused an overall increase in the amount of acreage subjected to the effects of catastrophic fire over the past fifteen to twenty years. This was accentuated by the 2003 Southern California fires that were dramatically captured by the news media. Later that year, Congress responded with the passage of legislation that provided land-management

[3] This area encompasses eleven national forests comprising 11.5 million acres. Press Release, Sierra Nevada Forest Prot. Campaign, California Attorney General, Conservation Groups Challenge Revised Sierra Plan (Feb. 1, 2005), http://www.sierracampaign.org/Press/2005-02-01_GroupsChallenge.html. There are also three major national parks, numerous acres of Bureau of Land Management lands, as well as state and private lands in the region. 1 CTRS. FOR WATER AND WILDLAND RES., UNIV. OF CAL., DAVIS, SUMMARY OF THE SIERRA NEVADA ECOSYSTEM PROJECT REPORT 15 tbl.1.1 (1996).

[4] STEPHEN J. PYNE, YEAR OF THE FIRES: THE STORY OF THE GREAT FIRES OF 1910 3 (2001).

agencies with additional means to address this buildup of biomass, as well as expectations by the public for quick federal action before the next catastrophic fire season occurs in the western United States.

A. The Advent of Wildland-Fire Use

The concept of allowing fires to burn, rather than taking active suppression efforts, is not a new phenomenon. But as the use of fire as a tool to address years of fuel buildup on the landscape increases, more individuals build their homes adjacent to federal lands in the Wildland-Urban Interface (WUI),[5] and the public demands cleaner air, the pressure on federal land managers to evaluate the numerous desired outcomes will continue to simmer. Prescribed- and wildland-use fires have other pseudonyms, including the infamous "let-it-burn" policy, which was excised from the federal land manager's vernacular after the 1988 Yellowstone Fires.[6] Whereas wildland-fire use is usually associated with naturally caused fires (i.e., lightning strikes) that are "managed" under certain prescriptions or burn objectives (i.e., fuels reduction), a prescribed fire or burn is associated with planned, ignited burns on the landscape.[7]

The National Park Service initiated a formal policy of prescribed burn in 1967-68.[8] The USDA Forest Service (Forest Service) followed a similar, modified policy until full adoption of a

[5] The WUI is the geographic intersection of disparate systems, wildland, and structures. FIRE & RESOURCE ASSESSMENT PROGRAM, CAL. DEP'T OF FORESTRY & FIRE PROT., THE CHANGING CALIFORNIA: FOREST AND RANGE 2003 ASSESSMENT A-17 (2003), http://www.frap.cdf.ca.gov/assessment2003/ Assessment_Summary/assessment_summary.html. "At this interface, structures and vegetation are close enough that a wildland fire could spread to structures or fire could spread from structures to ignite vegetation." *Id.*

[6] In 1988, approximately 793,000 acres of Yellowstone National Park were affected by fires that originally were allowed to burn under the National Park Service's "let-it-burn" policy, costing American taxpayers more than $120 million. Yellowstone National Park, Wildland Fire, http://www.nps.gov/yell/nature/fire/ index.htm (last visited July 17, 2006). Political fallout was heavy as Park Service management faced angry congressional representatives. Philip Shabecoff, *Park and Forest Service Chiefs Assailed on Fire Policy*, N.Y. TIMES, Sept. 10, 1988, at A6.

[7] A "prescribed fire" is defined as "a deliberate burn of wildland fuels in either their natural or modified setting and under specific environmental conditions which allow the fire to be confined to a predetermined area and intensity to attain a planned resource management objective." FIRE & RESOURCE ASSESSMENT PROGRAM, *supra* note 5, at A-15.

[8] Stephen J. Pyne, *The Perils of Prescribed Fire: A Reconsideration*, 41 NAT. RESOURCES J. 1, 1 (2001).

parallel policy in 1978-79.[9] The Forest Service was more recalcitrant in adopting such a policy for a number of reasons. First, fire protection was one of the three reasons for the establishment of forest reserves, the predecessors of our national forests.[10] The other goals of the agency's establishment—timber production and watershed protection—are captured in the enabling legislation for the Forest Service.[11] Second, to the lead federal firefighting agency the concept of allowing, let alone starting, a fire was contradictory to the Forest Service's basic mission.

Since the Forest Service's establishment in 1905, its message to the public was that fire was "bad" and aggressive action had to be taken against fires whether of human or natural origin.[12] This premise of aggressive action was embedded within the agency's "persona" by the Great Fires of 1910. During the 1910 fire season, five million acres burned in the western United States, mostly in northern Idaho and Montana.[13] In addition to the natural resources affected, the human toll was high—seventy-eight firefighters lost their lives, as well as numerous civilians, and a number of towns were burned to the ground.[14] As a result, the federal government declared war on wildfires and by 1935 the Forest Service had adopted its "10 a.m. policy" under the auspices of then-Chief Forester F.A. Silcox.[15] The policy required the suppression of all fires by 10 a.m. the morning following its report, or if that failed, by 10 a.m. the following day.[16] To galvanize the public, in 1947, the Ad Council launched the Forest Service's Smokey the Bear program and the slogan, "Remember, Only YOU Can Prevent Forest Fires."[17] This campaign is considered to be one of the most successful programs initiated by the Ad Council.[18]

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[9] *Id.*

[10] Act of June 4, 1897, ch. 2, 30 Stat. 11, 35.

[11] The Organic Act of 1897, 16 U.S.C. §§ 473-482 (2006).

[12] Pyne, *supra* note 8, at 1. **R**

[13] Michael P. Dombeck et al., *Wildland Policy and Public Lands: Integrating Scientific Understanding With Social Concerns Across Landscapes*, 18 CONSERVATION BIOLOGY 883, 884 (2004).

[14] *Id.*

[15] Pyne, *supra* note 8, at 1.

[16] *Id.*

[17] GERALD W. WILLIAMS, PUBL'N NO. FS-650, THE USDA FOREST SERVICE – THE FIRST CENTURY 86 (2000).

[18] *Id.* When given the words, "Remember, Only YOU . . . ," 95% of the public can finish the statement. Ninety-eight percent can correctly identify a picture of Smokey. *Id.*

While some celebrate the success of the Smokey the Bear program, others cite it and the agency's overall fire-suppression policy as the reason for the overabundance of fuels on the landscape today. The criticism of almost 100 years of suppression is reflected not only by the 1988 Yellowstone fires, but the large fire years of 1994, 2000, 2002, and 2003 in which seven to nine million acres burned each year.[19] Though these burn years are impressive with respect to number of acres burned, many of the affected acres are in rural America where human habitation is minimal. This changed drastically when the clash between the WUI, federal lands, and fire were highlighted by the Southern California fires of 2003. In an eleven-day period, 739,000 acres, more than 3600 homes, and twenty-six lives were lost.[20] The public's appetite for active management[21] to address the fuel buildup was already whetted through the 2000 and 2002 fire seasons; after 2003, it was insatiable.

B. Executive and Congressional Efforts to Meet the Public's Concerns

In response to the increasingly challenging fire seasons, the Executive Branch and Congress have responded with numerous initiatives and legislative proposals. Under the auspices of the U.S. National Fire Plan,[22] the political branches have developed President George W. Bush's Healthy Forest Initiative (HFI) and the Healthy Forest Restoration Act[23] (HFRA) in order to begin addressing the need to reduce the fuel loading on federal lands. The White House report announcing the HFI emphasized the causes of the unnatural fuel levels and risk of widespread catastrophic wildfire across the West, stating, "Today, the forests and

[19] Tania Schoennagel et al., *The Interaction of Fire, Fuels, and Climate Across Rocky Mountain Forests*, 54 BIOSCIENCE 661, 661 (2004). *See also* Dombeck et al., *supra* note 13, at 885 fig.1 (citing 2003 data provided by the National Interagency Fire Center).

[20] U.S. FOREST SERV., U.S. DEP'T OF AGRIC., PUBL'N NO. R5-MB-046, SIERRA NEVADA FOREST PLAN AMENDMENT—FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT, RECORD OF DECISION 3 (2004), *available at* http://www.fs.fed.us/r5/snfpa/final-seis/rod/pdfs/snfpa-rod.pdf.

[21] Active management is another term for mechanical treatments. Examples include pre-commercial thinning, biomass thinning, commercial thinning, salvage harvesting, group selection, piling, crushing, and mastication. *Id.* at 71.

[22] The program is designed to address concerns over catastrophic fires on federal lands. What Is the National Fire Plan?, http://www.fireplan.gov/overview/whatis.html (last visited Aug. 30, 2006).

[23] Healthy Forests Restoration Act of 2003, Pub. L. No. 108-148, 117 Stat. 1887.

rangelands of the West have become unnaturally dense, and ecosystem health has suffered significantly. When coupled with seasonal droughts, these unhealthy forests, overloaded with fuels, are vulnerable to unnaturally severe wildfires. Currently, 190 million acres of public lands are at increased risk of catastrophic wildfires."[24]

In the wake of the Southern California fires, Congress overwhelmingly passed the HFRA, despite the concerns of the environmental community,[25] and the law was signed by President Bush in December 2003.[26] The HFRA focuses on improving forest health and reducing the likelihood of reducing wildfire in the future. The Act's purposes are:

> (1) to reduce wildfire risk to communities, municipal water supplies, and other at-risk Federal land through a collaborative process of planning, prioritizing, and implementing hazardous fuel reduction projects;
> (2) to authorize grant programs to improve the commercial value of forest biomass (that otherwise contributes to the risk of catastrophic fire or insect or disease infestation) for producing electric energy, useful heat, transportation fuel, and petroleum-based product substitutes, and for other commercial purposes;
> (3) to enhance efforts to protect watersheds and address threats to forest and rangeland health, including catastrophic wildfire, across the landscape;
> (4) to promote systematic gathering of information to address the impact of insect and disease infestations and other damaging agents on forest and rangeland health;
> (5) to improve the capacity to detect insect and disease infestations at an early stage, particularly with respect to hardwood forests; and
> (6) to protect, restore, and enhance forest ecosystem components
> (A) to promote the recovery of threatened and endangered species;
> (B) to improve biological diversity; and
> (C) to enhance productivity and carbon sequestration.[27]

With this congressional direction, land-management agencies are now in the position to undertake efforts to reduce the unnaturally high levels of fuel loads on these lands. In the Sierra

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[24] WHITE HOUSE, HEALTHY FORESTS: AN INITIATIVE FOR WILDFIRE PREVENTION AND STRONGER COMMUNITIES 2 (2002), http://www.whitehouse.gov/ infocus/ healthyforests/Healthy_Forests_v2.pdf.

[25] Zachary Coile, *Congress Feels Heat On Logging Proposals—'Healthy Forests,' Feinstein Bill Await Senate's Action*, S. F. CHRONICLE, Oct. 28, 2003, at A8.

[26] *See* The Official U.S. Healthy Forests Website, http://www.healthyforests.gov/ initiative/legislation.html (last visited June 25, 2006).

[27] Healthy Forests Restoration Act of 2003, 16 U.S.C. § 6501 (2006).

Nevada's National Forest System lands, the Sierra Nevada Framework Record of Decision provides for the reduction of "biomass covering 8 million acres of forestland" within the eleven national forests covered by the decision.[28] Critics of both the HFI and HFRA maintain that they will have detrimental effects on the environment while doing little to reduce fuel loads on federal lands.[29]

Prior to the Healthy Forests Initiative, passage of the HFRA, and approval of the Sierra Nevada Framework Records of Decision, which apply only to Forest Service lands in California, thinning and prescribed-fire projects were carried out across 1 million acres of federal land under the auspices of the U.S. National Fire Plan.[30] During fiscal year 2004, the agencies treated[31] more than 4 million acres, of which 2.3 million acres were located on WUI lands.[32] Of the 4.2 million acres treated, hazardous-fuel treatments occurred on 3.06 million acres, 2.35 million acres of which were accomplished through prescribed burning.[33] In addition, 120,000 acres were allowed to burn as "wildland fire use" fires.[34] While the number of acres being treated through wildland-fire use and prescribed burning is increasing, these efforts are focused within the urban interface.[35] Because of the human presence, both fiscal and political costs can be high.[36] As more American tax dollars are spent to reduce the biomass of fuels on the landscape, it will lead to an increase in smoke in air basins,

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[28] U.S. FOREST SERV., *supra* note 20, at 3.

[29] Lee Green, *What Bears Do in the Woods*, L.A. TIMES MAG., Nov. 21, 2004, at 24.

[30] Schoennagel et al., *supra* note 19, at 661.

[31] The term "treatment" refers to the removal of vegetation. The removal of vegetation through the use of hand-operated mechanical tools such as chain saws is called hand treatment. U.S. FOREST SERV., *supra* note 20, at 71. Prescribed burning treatment is the removal of fuel loads through the use of prescribed burns. *See id.* For a description of mechanical treatments, see *supra* note 21.

[32] Press Release, U.S. Dep't of the Interior, Bush Administration Officials: Federal Land Managers Set Record-Level Accomplishments of President's Healthy Forest Initiative (Oct. 12, 2004), *available at* http://www.doi.gov/news/041012b.

[33] HEALTHY FORESTS INITIATIVE, HEALTHY FORESTS REPORT 1-2 (2004), *available at* http://www.healthyforests.gov/projects/healthy-forests-report-final.pdf.

[34] *Id.* at 2.

[35] *See* Cindy Strella, *Controlled Burn to Protect Homes*, SACRAMENTO BEE, June 22, 2006, at G2 (notifying residents of planned prescribed burn in the area).

[36] Stuart Leavenworth & Deb Kollars, *Blazes Renew Policy Battle: Many Predict the State Won't Learn—or Change—Anything from Latest Disaster*, SACRAMENTO BEE, Nov. 2, 2003, at A1.

resulting in CAA violations, forcing a decision to be made as to which prevails—clean air or a "safe" environment.

II

CLEAN AIR ACT OVERVIEW—EXPECTATIONS AND REQUIREMENTS

And 'tis my faith, that every flower enjoys the air it breathes.[37]

The Clean Air Act (CAA) was originally enacted in 1955[38] and substantially strengthened in 1970.[39] The statute is now more than 800 pages long and has been amended numerous times over the past thirty-six years. But the heart of the legislation remains intact, delegating to the Environmental Protection Agency (EPA) the task of setting national ambient air-quality standards (NAAQS) for certain "harmful and pervasive" air pollutants and requiring states to create implementation plans to meet those standards by a set statutory time period.[40] The EPA must set NAAQS for six criteria pollutants: sulfur dioxide, nitrogen dioxide, carbon monoxide, lead, ozone, and particulate matter (PM).[41] To minimize the adverse health effects of smoke inhalation, the burning of wood and subsequent smoke effects are regulated under the last criteria.[42]

The use of fire as a fire-reduction tool can have effects beyond those to human health. For example, smoke contains PM and is one of the main sources of haze, which can reduce visibility across the landscape.[43] As a result, concern about PM-levels and visibility management can impede the use of both wildland-use and prescribed-burn fires. Consequently, conflicts can arise be-

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[37] William Wordsworth, *Lines Written in Early Spring*, *in* WILLIAM WORDSWORTH 80, 80-81 (Stephen Gill ed., 1984).

[38] *See* Air Pollution Control Act, ch. 360, 69 Stat. 322 (1955) (codified as amended at 42 U.S.C. §§ 7401-7671q (2006)).

[39] Clean Air Act Amendments of 1970, Pub. L. No. 91-604, 84 Stat. 1676.

[40] CASES AND MATERIALS ON ENVIRONMENTAL LAW 289 (Roger W. Findley et al. eds., 6th ed. 2003).

[41] *See* 42 U.S.C. § 7409 (2006).

[42] *See, e.g.*, 40 C.F.R. 49.124 (2006) (describing regulations on the emission of particulate matter on Indian reservations in EPA Region 10). Known effects of PM include impaired breathing and respiratory systems, irritation of the nose and throat, impairment of the body's ability to fight disease, aggravation of existing lung and cardiac disease, damage to lung tissue, carcinogenesis, and premature death. PM is particularly dangerous to the elderly, children, and people with chronic lung disease. CASES AND MATERIALS ON ENVIRONMENTAL LAW, *supra* note 40, at 299-300.

[43] 42 U.S.C. §§ 7491-7492 (2006).

tween efforts to reduce biomass on federal lands and maintain healthy air standards for the American public.

A. Particulate Matter

The EPA must set NAAQS for certain "pervasive and harmful air pollutants."[44] PM is one of the six criteria pollutants[45] and is the one that is most associated with smoke generated from managed fires. For such pollutants, the EPA must publish air-quality criteria that provide information on the effects of the pollutant to public health or welfare.[46] The EPA must also issue information to the states on available control techniques to reduce the amount of pollutant to reach the air.[47] Once identified, the EPA Administrator must establish both primary and secondary ambient air-quality standards.[48] Primary standards must ensure that the public's health is protected, while secondary standards protect the public's welfare from known and future adverse effects.[49] These standards must be set to *reasonably* protect human health and welfare, but the CAA does not require the Administrator to set zero-risk-level standards.[50]

While extremely complicated and scientific, NAAQS for particulate matter are set with standard values for both primary and secondary types on an annual basis and for an arithmetic mean 24-hour average.[51] Once NAAQS are established, the EPA must determine those regions of the country that are not meeting these standards (referred to as nonattainment areas),[52] those that are in attainment,[53] and those that are determined to be unclas-

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[44] CASES AND MATERIALS ON ENVIRONMENTAL LAW, *supra* note 40, at 288.

[45] *Id.* at 294.

[46] *Id.*

[47] DAVID R. WOOLEY & ELIZABETH M. MORSS, CLEAN AIR HANDBOOK: A PRACTICAL GUIDE TO COMPLIANCE § 1:3, at 9 (13th ed. 2003).

[48] 42 U.S.C. § 7409(a)(1)(A) (2006).

[49] *Id.* § 7409(b)(1)-(2).

[50] WOOLEY & MORSS, *supra* note 47, § 1:3, at 9-10 (emphasis added).

[51] 40 C.F.R. §§ 50.6-50.7 (2006). For a good overview of how these standards are set and their meaning, see generally CLEAN AIR LAW AND REGULATION (Timothy A. Vanderver, Jr. et al. eds., 1992).

[52] The term "nonattainment" refers to an area that is shown by monitored data or that is calculated by air-quality modeling to exceed national ambient-air-quality standards for such a pollutant. CLEAN AIR LAW AND REGULATION, *supra* note 51, at 399.

[53] The term "attainment" is a designation indicating whether a particular area meets a national ambient-air-quality standard for a pollutant. *Id.* at 385.

sifiable.[54] These standards are not static,[55] nor does an attainment for a region necessarily mean attainment for all pollutants.[56] But as demographics shift and increases in urban growth and associated pollutants (i.e., car emissions) occur, an area currently in attainment for one pollutant may find itself in nonattainment for that same pollutant in the future.[57] If these changes occur, the EPA must notify the state of the changed condition and the state then must submit whatever designation it believes is appropriate for EPA's approval.[58]

As previously noted, PM is the key criteria pollutant associated with smoke from fires, whether agricultural, controlled forest, or wildfire burns, and its influx into the atmosphere further impacts the visibility of an area. The issue over visibility and NAAQS was at the core of *Natural Resources Defense Council v. EPA*,[59] when plaintiffs sued the EPA for failure to promulgate NAAQS for PM. Since then, the EPA has set standards for PM and has begun to address visibility issues through the promulgation of its final regional haze rule in 1999.[60]

B. Visibility—Impacts and Efforts to Address Clean Air Act Requirements

Haze on the skyline at dusk can magnify the colors in a sunset. However, its cause can leave a person short of breath on a hot, stifling midday walk in any urban area. Haze is simply a by-product of PM pollution, whether from automobile exhaust, a smokestack, volcanic ash, or a forest fire.[61] In an attempt to address haze, and hence visibility, the 1977 Clean Air Act Amendments[62] declared "as a national goal the prevention of any future, and the remedying of existing, impairment of visibility in mandatory Class I federal areas [airsheds] which impairment results from manmade air pollution."[63]

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[54] In unclassifiable areas, there has been insufficient monitoring for firm air-quality determinations to have been made. *Id.* at 407.

[55] WOOLEY & MORSS, *supra* note 47, § 1:4, at 14.

[56] *Id.*

[57] *Id. See also* 42 U.S.C. § 7407(d)(3) (2006).

[58] WOOLEY & MORSS, *supra* note 47, § 1:4, at 14.

[59] 902 F.2d 962 (D.C. Cir. 1990), *vacated in part*, 921 F.2d 326 (D.C. Cir. 1991).

[60] Regional Haze Program Requirements, 40 C.F.R § 51.308 (2006).

[61] *See, e.g.*, CASES AND MATERIALS ON ENVIRONMENTAL LAW, *supra* note 40, at 300.

[62] Clean Air Act Amendments of 1977, Pub. L. No. 95-95, 91 Stat. 685.

[63] 42 U.S.C. § 7491(a)(1) (2006).

These mandatory Class I airsheds are defined as the 158 designated international parks, congressionally designated wilderness areas larger than 5000 acres, national memorial parks larger than 5000 acres, and national parks exceeding 6000 acres that were in existence on August 7, 1977.[64] Within the Sierra Nevadas there are thirteen Class I airsheds, including Sequoia–King's Canyon, Lassen Volcanic, and Yosemite National Parks, as well as eleven wilderness areas.[65] Under the CAA, these airsheds must have the most pristine air and have the most stringent protections to maintain those characteristics.[66] Thus, the decision to allow a wildland-use fire to burn or to initiate a prescribed burn usually affects locations near, or actually within, a Class I airshed.

While fire and its subsequent effect on air quality is short-term in nature, its effects on visibility are addressed by the CAA. To begin to address the issue of regional haze and visibility impairment, Congress amended the CAA in 1990, adding section 169B.[67] In response to Congress' amendments,[68] the EPA promulgated its final regional haze rule on July 1, 1999.[69] In an effort to protect visibility, section 169B requires the EPA and other federal agencies to conduct visibility-impairment research and monitoring in mandatory Class I airsheds.[70] Based on this information, if the EPA Administrator deems that the interstate transport of air pollutants contributes to, or may contribute to, the impairment of Class I airsheds, the Administrator may establish a Visibility Transport Region.[71]

Congress immediately designated a Visibility Transport Commission for "the region affecting visibility of the Grand Canyon National Park."[72] Accordingly, the EPA established the Grand

64 Michael T. Palmer, *The Regional Haze Rule: EPA's Next Phase in Protecting Visibility under the Clean Air Act*, 7 ENVTL. LAW. 555, 566-67 (2001). *See also* 42 U.S.C. § 7472(a) (2006).

65 WOOLEY & MORSS, *supra* note 47, § 1:41, at 74. For a map of the thirteen Class I airsheds, see *id.* at 77.

66 Palmer, *supra* note 64, at 567. *See also* 42 U.S.C. § 7473(b)(1)-(3) (2006).

67 Clean Air Act Amendments of 1990, Pub. L. No. 101-549, § 169B, 104 Stat. 2399, 2695-97.

68 Palmer, *supra* note 64, at 559.

69 Regional Haze Regulations, 64 Fed. Reg. 35,714, 35,714 (July 1, 1999) (to be codified at 40 C.F.R. pt. 51). The rule established requirements for implementation plans, plan revisions, and progress reviews to address regional haze. *See generally* 40 C.F.R. § 51.308 (2005).

70 42 U.S.C. § 7492(a)(1) (2006).

71 Palmer, *supra* note 64, at 579. *See also* 42 U.S.C. § 7492(c)(1).

72 Palmer, *supra* note 64, at 579. *See also* 42 U.S.C. § 7492(f).

Canyon Visibility Transport Commission, which consisted of federal and tribal representatives, and eight western governors or their representatives.[73] A final report with recommendations was presented to the EPA from the Commission in June 1996. Many of the recommendations were incorporated in the final regulations, which would allow the nine western states to implement a national regional strategy.[74] The Commission noted that wildfire, prescribed fire, and agriculture burning are important "episodic contributor(s)" to visibility problems and urged that their contributions "be addressed equitably as part of a visibility protection strategy."[75]

While hailed as a "true compromise" by some, the regulations associated with the Best Available Retrofit Technology (BART)[76] requirements were successfully challenged in *American Corn Growers Ass'n v. EPA*.[77] This outcome affects one source of visibility problems, haze, in mandatory Class I airsheds. In *American Corn Growers*, the D.C. Circuit rejected petitioners claim that the EPA lacked the authority to implement a "no degradation" requirement in Class I airsheds.[78] The court noted that because the requirement was intended to meet a statutory goal, the EPA was authorized to issue regulations.[79] However, petitioners did not challenge the inclusion of smoke from prescribed or wildland-fire use fires into the regional haze rule,[80] thus al-

[73] Federal representation, beyond the EPA, included the National Park Service, the Bureau of Land Management, the Fish and Wildlife Service, and the Forest Service. The tribes were represented by the Navajo, Hopi, Hualapai, and Acoma Pueblo nations. The eight states represented were Arizona, California, Colorado, Nevada, New Mexico, Oregon, Utah, and Wyoming. Idaho was located within the region, but elected to not participate in the process. GRAND CANYON VISIBILITY TRANSPORT COMM'N, RECOMMENDATIONS FOR IMPROVING WESTERN VISTAS 3 (1996), http://wrapair.org/WRAP/reports/ GCVTCFinal.PDF.

[74] *See* 40 C.F.R. § 51.309 (2005).

[75] Palmer, *supra* note 64, at 583.

[76] Under 42 U.S.C. § 7491(b)(2)(A), major stationary sources in one of twenty-six categories that (1) can emit 250 or more tons per year of certain air pollutants, (2) were constructed between 1962 and 1977, and (3) emit any "air pollutant which may cause or contribute to any impairment of visibility," must utilize the Best Available Retrofit Technology. WOOLEY & MORSS, *supra* note 47, § 1:46, at 82.

[77] 291 F.3d 1 (D.C. Cir. 2002). The EPA required that states ensure that while efforts were being made to increase visibility on days with limited visibility, no degradation in visibility would occur on days with high visibility. 40 C.F.R. § 51.308 (2005).

[78] *Id.* at 10.

[79] *Am. Corn Growers*, 291 F.3d at 10.

[80] *See generally id.* at 6-13 (considering each of petitioner's allegations).

lowing for the continued use of these management tools by federal agencies.

The rule encourages agencies to develop, adopt, implement, and evaluate long-term strategies for Class I airsheds in order to make reasonable progress toward remedying existing and preventing future visibility impairment over the next ten to fifteen years.[81] As a result, states must consider these issues as they develop their State Implementation Plans and work toward meeting the requirements of the CAA.

C. Air-Quality Management in the State of California

The EPA breaks the country into ten regions, with California, Nevada, Arizona, Hawaii, the Pacific Islands, and Tribal Nations comprising Region 9.[82] California's Air Resources Board is charged with the goal of meeting the EPA's direction to maintain air quality in the state.[83] However, in a state such as California, which boasts a diverse landscape, growing population, various commercial interests, and millions of automobiles, conflicts are bound to occur between a goal of maintaining a clean, safe environment and an economic engine that is the sixth largest in the world.[84]

1. Overview of Air-Quality Management in California

California's Air Quality Board has divided the state into fifteen air basins, with the Sacramento and San Joaquin Air Quality Management Districts lying at the foothills of the Sierra Nevada Range.[85] While the two basins are the gateway to some of the most spectacular scenic areas of California, they also have some of the most polluted air in the country.[86] Many of the cities in these two basins, including Fresno, Modesto, and Sacramento,

[81] 40 C.F.R. § 51.309 (2006).

[82] U.S. EPA Region 9, http://www.epa.gov/region9/ (last visited June 27, 2006).

[83] CAL. HEALTH & SAFETY CODE § 39602 (West 2006).

[84] LEGISLATIVE ANALYST'S OFFICE, CAL FACTS: CALIFORNIA'S ECONOMY AND BUDGET IN PERSPECTIVE 1 (2004), http://www.lao.ca.gov/2004/cal_facts/cal_facts_2004.pdf.

[85] Cal. Air Dist. Res. Directory, http://www.arb.ca.gov/capcoa/ roster.htm (last visited June 27, 2006). The San Joaquin Air Basin is approximately 25,000 square miles in size. Cal. Air Basins Gen. Info., http://www.arb.ca.gov/knowzone/basin/ basin.htm (click on "Find Your Air Basin"; then select "San Joaquin Valley") (last visited June 27, 2006).

[86] Am. Lung Ass'n, 2004 State of the Air Report, http://lungaction.org/reports/sota04_analysis5.html (last visited June 27, 2006).

have the dubious honor of being among the top twenty-five worst polluted cities in America for ozone and PM.[87]

The issue over noncompliance with CAA requirements in heavily populated urban and complex environments can be demonstrated by the litigation filed against the San Joaquin Air Quality Management District (Management District) by the numerous environmental and public-interest groups in 2002.[88] Plaintiffs, led by Earthjustice, brought suit alleging the Management District was unable to enforce the state implementation plan for the air basin,[89] noting that the San Joaquin Valley had never met air-quality standards for ozone.[90] Compliance with PM limits had also become difficult because of the growth of large commercial dairy farms within the valley.[91] This record of noncompliance was noted in a June 19, 2003, news release by the Management District, which revealed that on average, the San Joaquin Air District had failed to meet federal standards for PM twelve times between 1999 and 2001.[92] Non-compliance is a result of the region's heavy association with farming, and in particular the dairy industry, which generates $4.5 billion of the estimated $14 billion agriculture industry's contribution to the San Joaquin Valley's economy.[93] Due to agriculture's huge economic impact on the state's economy, that industry had been exempt to CAA regulations.[94]

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[87] Am. Lung Ass'n, Rankings, http://www.lungusa.org/site/pp.asp?c=dvLUK9O0E&b=50752 (last visited Aug. 31, 2006). Nearly 55% of the U.S. population lives in counties that have unhealthy levels of ozone and PM. Approximately 81 million Americans are exposed to unhealthy levels of short-term PM and 66 million suffer chronic exposure to PM. Am. Lung Ass'n, State of the Air 04 Introduction, http://lungaction.org/reports/sota04_intro1.html (last visited July 16, 2006). Exposure to such unhealthy levels of ozone and PM results in increased levels of asthma and heart failure, particularly to children and the elderly. Coalition for Clean Air, Pollutants & Health Effects, http://www .coalitionforcleanair.org/air-pollution-pollutants.html (last visited Aug. 31, 2006).

[88] David A. Yengoyan, *Title V of the Clean Air Act: The Effect of California's Agriculture Exemption on the San Joaquin Valley*, 13 SAN JOAQUIN AGRIC. L. REV., 151, 152 (2003).

[89] *Id.* at 156.

[90] *Id.* at 155-56.

[91] *See id.* at 167-68.

[92] Press Release, San Joaquin Air Quality Mgmt. Dist., Air District's PM 10 Attainment Plan Approved (June 19, 2003), *available at* http://www.valleyair.org/ Recent_news/Media_releases/mediarelease%206-19-03.pdf.

[93] Yengoyan, *supra* note 88, at 167-68.

[94] *See id.* at 168.

As a result of the lawsuit, the EPA determined that California's agriculture business could not be exempt from the CAA requirements and entered into a settlement agreement with the plaintiffs.[95] The settlement required farmers throughout the state to apply for permits as a "major source" of air pollution.[96] The legislature withdrew the agricultural exemption[97] and a consent decree required the EPA to take action against the Management District's inadequate 1997 PM-10[98] Action Plan.[99] Since the settlement agreement, the 1997 PM-10 Action Plan has been withdrawn[100] and a new plan was released on December 18, 2003.[101]

While the focus of the lawsuit was over the impact of agriculture on the air quality in the basin and agriculture's longstanding exemption to the CAA requirements, other activities are known emitters of pollutants into the environment. In particular, agricultural and prescribed burning rank jointly as the fifth largest contributor to the formation of smog in the San Joaquin Valley.[102] Since October 2001, when the EPA designated the San Joaquin Valley a "severe" ozone region, small improvements in air quality have allowed for a request to lower the designation

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[95] *Id.* at 163.

[96] *Id.* at 164. A major source is "any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit considering controls, in the aggregate, ten tons per year or more of any hazardous air pollutant or twenty-five tons per year or more of any combination of hazardous air pollutants. The Administrator may establish a lesser quantity, or in the case of radionuclides different criteria, for a major source than that specified in the previous sentence, on the basis of the potency of the air pollutant, persistence, potential for bioaccumulation, other characteristics of the air pollutant, or other relevant factors." 42 U.S.C. § 7412(a)(1) (2006).

[97] Press Release, Earthjustice, California State Assembly Passes Landmark Clean Air Bill (Sept. 11, 2003), http://www.earthjustice.org/news/press/003/california_state_assembly_passes_landmark_clean_air_bill.html.

[98] PM-10 is the limit established by the EPA in July 1987. Under this limit, particulates may not have an aerodynamic diameter greater than ten micrometers. This limit was set after research established that adverse health effects occur from such small particles. Revisions to the National Ambient Air Quality Standards for Particulate Matter, 52 Fed Reg. 24,634, 24,664-701 (July 1, 1987).

[99] Yengoyan, *supra* note 88, at 158-59.

[100] *Id.* at 158.

[101] *See generally* SAN JOAQUIN VALLEY AIR MGMT. DIST., PM10 PLAN FOR 2003 (2003), http://www.valleyair.org/Air_Quality_Plans/2003%20PM10%20Plan%20Amended.pdf.

[102] Yengoyan, *supra* note 88, at 166.

from severe to extreme.[103] But it is abundantly apparent that more stringent compliance and enforcement is needed if the San Joaquin and Sacramento Air Quality Management districts are to be brought into attainment.[104]

2. The Conflict

The issues debated in the San Joaquin Valley can be superimposed to many large urban environments that interface with federal lands. In these locations, land-management activities will conflict with the requirements of the CAA. This is even truer with Congress' passage of the HFRA, which emphasizes the reduction of wildfire risk to communities, municipal watersheds, and other "at-risk" federal lands through a collaborative process to reduce the amount of hazardous fuels on the landscape.[105] Both the Forest Service and the U.S. Fish and Wildlife Service have taken these goals to heart; the agencies reported treating more than 4.2 million acres in fiscal year 2004, with approximately 2.35 million acres accomplished through prescribed burning.[106] This rush to treatment, and in particular the use of prescribed burning, has not come without a cost. There are two potential adverse effects of relying on fire to reduce fuel loads on the landscape: (1) prescribed and wildland fires can become catastrophic wildfires, and (2) air quality is sacrificed.[107]

The reliance on prescribed burning and wildland-fire use fires is not coincidental. Fire is considerably cheaper than hand treat-

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[103] Press Release, San Joaquin Air Quality Mgmt. Dist., Air District Board Approves 'Extreme' Designation Request (Dec. 18, 2003), http://www.valleyair.org/Recent_news/Media_releases/Rls%20Extreme%20approved%2012-18-03.pdf.

[104] The San Joaquin Valley Control Air Pollution District will require farmers with more than 100 contiguous acres and dairies with more than 500 cows to submit plans by the end of 2005 documenting what they are doing to reduce microscopic dust, chemicals or other substances from their land to assist in further abating the air pollution in the San Joaquin Valley. Juliana Barbasa, Associated Press, *Farmers Have Until Year's End To Turn in Clean Air Plans*, BAKERSFIELD CALIFORNIAN, Dec. 22, 2004, *available at* http://www.valleyair.org/recent_news/news_clippings/in%20the%20news%20—%20dec.%2022%202004.pdf.

[105] U.S. GEN. ACCOUNTING OFFICE, PUBL'N NO. GAO-04-705, WILDLAND FIRES: FOREST SERVICE AND BLM NEED BETTER INFORMATION AND A SYSTEMATIC APPROACH FOR ASSESSING THE RISKS OF ENVIRONMENTAL EFFECTS 3 (2004), *available at* http://www.gao.gov/new.items/d04705.pdf.

[106] HEALTHY FORESTS INITIATIVE, *supra* note 33, at 2.

[107] Laura Sweedo, *Where There is Fire, There is Smoke: Prescribed Burning in Idaho's Forests*, 8 DICK. J. ENVTL. L. & POL'Y 121, 140 (1999).

ments.[108] Fire treatments can cost as little as $25 per acre while hand treatments can reach as high as $1500 per acre.[109] As a result, fire treatment is the preferred method of fuel reduction. This is reflected in the Healthy Forests Initiative report, where of the 4.2 million acres treated, 72%, or 3.06 million acres were in areas associated with hazardous fuels.[110] Of those 3.06 million acres, 2.35 million acres of fuel-load reduction was accomplished through the use of fire.[111] The remaining 719,000 acres, or 23%, were removed through mechanical or "other" means.[112] Removal of the remaining 1.89 million acres was accomplished through "secondary benefit" projects, including wildlife improvement projects, timber sales, and other silvicultural treatments on the landscape.[113] It is these latter projects that usually occur most frequently on the WUI lands. However, these projects have a much higher cost associated with planning and implementation,[114] and raise the suspicions of the environmental community.[115] In many instances, these suspicions are followed by lawsuits, which increase the overall cost of a project.

Today, most urgent work is needed within WUI lands. But the Executive Branch, in order to show progress, must meet Congress' obsession with numbers—the more acres treated the better. In addition, the limited "window" for burning outside WUI acres, or allowing a wildland-fire use fire to continue on more remote lands, is becoming more constrained by the requirements

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[108] Hand treatment can include the use of chainsaws and/or large industrial grinders to thin, chip, and/or mechanically remove the brush. U.S. FOREST SERV., *supra* note 20, at 71. Some of these projects are associated with a timber sale to assist in off-setting the cost and encourage market participation in a labor-intensive program. Due to the high human-capital costs, as well as the environmental community's suspicion of including a timber sale as part of a "stewardship" project, the cost of planning and implementing are much greater than the use of fire for treatment across the landscape. For additional information, *see infra* notes 114-115 and accompanying text.

[109] Faith Bremner, *Tree-Thinning Funds: Do They Go Where Needed?*, SEATTLE TIMES, Aug. 7, 2006, at A4.

[110] HEALTHY FORESTS INITIATIVE, *supra* note 33, at 2.

[111] *Id.*

[112] *Id.*

[113] *Id.*

[114] *Cf. Hearing on Fiscal Accountability in the U.S. Forest Service Before the H. Comm. on Agriculture*, 105th Cong. 76 (1998) (statement of Bruce Daucsavage, Vice President, Ochoco Lumber Co.) ("[P]oor agency management has resulted in timber sale planning and preparation work being done several times.").

[115] *See e.g.,* Brad Knickerbocker, *With Oregon Timber Sale, Controversy Flares*, CHRISTIAN SCI. MONITOR, June 14, 2006, at 2.

of the CAA. Two incidents during the summer of 2004 demonstrated these constraints.

The first is associated with the Sequoia–Kings Canyon National Park, while the second concerned Yosemite National Park, both of which are Class I airsheds. In the Sequoia–King's Canyon incident, park officials "defied a burn ban from local air-quality authorities and lit a brush-thinning fire" on June 30, 2004.[116] The District fined the National Park Service $75,000 for ignoring the ban.[117] While no final resolution has occurred between the two entities, some see this as a chilling effect on the use of prescribed fires to reduce the fuels loading on federal lands. As one Wilderness Society representative stated, "[t]he San Joaquin Valley Air Pollution Control District is functioning more as part of the problem than part of the solution."[118]

Possibly with this in mind, Yosemite Park officials elected to not complete a large prescribed burn in the park in October 2004 as heavy smoke associated with two large wildfires occurring in the El Dorado National Forest accumulated in the Sacramento and San Joaquin Air Districts.[119] The El Dorado fire postponed the hoped-for completion a 7500-acre prescribed burn, which had been ignited in 2002 but was stopped due to concerns associated with the resulting smoke.[120] To date, officials have not announced an intention to complete the prescribed burn in the park.

In June 2004, the EPA, in conjunction with local, state, and federal agencies, released the "Wildland-Fire Use" protocol, which seeks to allow wildland-fire use to occur while protecting public health and safety.[121] The challenge is that competing interests between congressional direction and the Executive Branch's desire to meet public expectations result in confusion

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116 Mark Grossi, *Park Burn Opens Door to Fine*, MODESTO BEE, Sept. 5, 2004, at B2.

117 Mark Grossi, *Parks Pitted Against Air Quality*, MODESTO BEE, Sept. 12, 2004, at B6.

118 *Id.*

119 Press Release, Yosemite Nat'l Park, Nat'l Park Serv., U.S. Dep't of the Interior, Yosemite National Park Seeks Arsonist, Battles Hetchy Fire (Oct. 15, 2004) (on file at the Journal of Environmental Law and Litigation).

120 Joshua Wolfson, *Controlled Park Burning Ahead*, UNION DEMOCRAT (Sonora, Cal.), Oct. 8, 2004, at A1.

121 Press Release, Envtl. Prot. Agency, U.S. EPA Announces Fire Management Protocol (June 14, 2004), *available at* http://www.arb.ca.gov/smp/wfu/wfu_press_release_usepa.pdf.

regarding the application of wildland-fire use as an appropriate tool to address fuel loading on federal lands. This confusion, as well as legal confrontations between state and federal officials over CAA requirements, have resulted in the formidable task of addressing the appropriate use of wildland fire and prescribed fire to reduce fuel loading on federal lands to have a beneficial outcome for all involved.

III

A TIME FOR ACTION WHILE MEETING CONFLICTING OBJECTIVES

If you wish to know the road ahead, inquire of those who have traveled it.[122]

Unfortunately, legislation, and consequently efforts by the agencies attempting to implement the programs, uses a blanket approach to accomplish tasks. For example, the Forest Service is committed to ensuring that at least fifty percent of acres treated are in the WUI.[123] A similar proportion of dollars will likely be spent for fuel treatments in the WUI.[124] Yet, while the HFRA focuses on communities, the reporting mechanism the agencies provide to Congress is feedback through *total* "acres treated."[125] A different measurement system needs to be embraced if the goal is to address the two conflicting needs of society: clean air and an environment safe from catastrophic wildfire.

A. Communities at Risk

Communities at risk were originally identified in January 2001, when the Secretaries of Agriculture and the Interior issued a Federal Register notice that identified more than 4000 communi-

[122] SEVEN HUNDRED CHINESE PROVERBS 22 (Henry H. Hart trans., Stanford Univ. Press 1937).

[123] In 2005, the Forest Service treated 2.7 million acres of land to reduce hazardous fuels, with more than sixty percent of those acres in the WUI. FOREST SERV., U.S. DEP'T OF AGRIC., PRESIDENT'S BUDGET: FISCAL YEAR 2007 7 (2006), *available at* http://www.fs.fed.us/publications/budget-2007/fy2007-forest-service-budget-overview.pdf.

[124] *Cf. id.* The fiscal year 2007 budget proposes $292 million for the treatment of hazardous fuels, which will enable the agency to treat as many as 2.8 million acres, seventy percent of which are in the WUI.

[125] *See generally* HEALTHY FORESTS INITIATIVE, *supra* note 33.

ties that were at high risk to wildfire.[126] An updated list, issued in August 2001, includes 11,367 communities, of which 9457 are communities near federal lands.[127] This effort was undertaken to meet congressional directives.[128]

Identifying these communities assists interagency groups of state and tribal land managers in identifying priority areas that would benefit from hazard-reduction activity. As a result, funding would flow to these local areas in an effort to reduce the risks on a "meaningful scale."[129] Of the more than 11,000 communities at high risk of catastrophic wildfire, 9600 had no hazardous-fuels-reduction treatments ongoing or planned for implementation in fiscal year 2001.[130] The departments noted the primary reasons for the lack of treatments around these communities were the requisite planning requirements, community awareness and support, lack of implementation capability, lack of funding, and the federal role in prioritizing projects.[131]

With the passage of the HFRA, some of these challenges have been overcome. In particular, the required planning efforts have been streamlined,[132] much to the dismay of many in the environ-

126 Urban Interface Communities Within the Vicinity of Federal Lands that are at High Risk from Wildfire, 66 Fed. Reg. 751-02 (Jan. 4, 2001); *see also* Press Release, U.S. Dep't of Agric., Over 4000 Communities On Preliminary List to Benefit from Enhanced Federal Wildfire Protection Assistance (Jan. 4, 2001) (on file at the Journal of Environmental Law and Litigation).

127 Urban Interface Communities Within the Vicinity of Federal Lands that Are at High Risk from Wildfire, 66 Fed. Reg. 43,384, 43,384 (Aug. 17, 2001).

128 In an appropriations bill, Congress required the Secretaries to consult with the states in order to develop a list of urban wildland-interface communities within the vicinity of federal lands that are at high risk from wildfire. Department of the Interior and Related Agencies Appropriations Act, 2001, Pub. L. No. 106-291, 114 Stat. 922, 1009 (2000).

129 Urban Interface Communities Within the Vicinity of Federal Lands that Are at High Risk from Wildfire, 66 Fed. Reg. at 43,384.

130 *Id.*

131 *Id.* at 43,384-85. It has been noted that "[t]he completion of Federally mandated planning, consultation, and environmental compliance activities for projects associated with the large number of communities remaining to be addressed will require significant time and effort." *Id.* at 43,385. The Secretaries also emphasized that "[o]n-the-ground implementation of fuel reduction projects around urban wildland-interface communities will require a trained and available workforce, not only to implement project prescriptions, but also to assist communities with utilization or disposal of removed vegetative materials," and this was lacking in many areas to accomplish the task. *Id.*

132 USDA Forest Serv. & USDI Bureau of Land Mgmt., Publ'n No. FS-799, The Healthy Forests Initiative and Healthy Forests Restoration Act: Interim Field Guide 3 (2004) *available at* http://www.blm.gov/nhp/news/ releases/ pages/2004/pr040303_forests/FullFieldGuide.pdf.

mental community.[133] One environmental group has alleged that "the healthy forest legislation is a propaganda effort that gives the logging industry exactly what it wants: easier access to timber on federal lands without the compliance to federal laws."[134] Others disagree, believing that "efforts to streamline the planning requirements allow the money to go where it is most needed—on the land where the treatments need to occur."[135] What is not disputed, however, is that the HFRA has relieved both the Forest Service and the Fish and Wildlife Service of many of the regulatory burdens that were identified in 2001.

In addition to streamlining many of the environmental regulations, community awareness has been heightened by the numerous intense-fire years, which was accentuated by the fires in Southern California in 2003. Funding to the Forest Service and Fish and Wildlife for hazardous-fuels-reduction efforts has hovered around $400 million since 2001.[136] This funding has resulted in 5.6 million acres treated in the WUI, which amounted to almost one-half of treated acreage to date.[137] In 2005, Congress also provided "funds . . . for hazardous fuels reduction, not to exceed $5,000,000, [that] may be used to make grants . . . for the purpose of creating incentives for increased use of biomass from National Forest lands."[138]

However, several questions remain: are these efforts enough to address those communities that are in airsheds where the use of prescribed burning and wildland-fire use is limited due to the requirements of the CAA? Are they correctly focused? I argue that they are not enough. I believe that a new measurement system needs to be devised, and other incentives utilized, to address this need in a manner that is in concert with the two legislative objectives.

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133 Forest Protection & Restoration: Debunking the "Healthy Forests Initiative", http://sierraclub.org/forests/fires/healthyforests_initiative.asp. (last visited Sept. 18, 2006).

134 Healthy Forest Initiative: A Campaign of Severe Forest Policy Rollbacks, http://www.wildcalifornia.org/publications/article-57 (last visited June 29, 2006).

135 The Healthy Forest Initiative: Legislative and Regulatory Update, http://www.safnet.org/policyandpress/hfiupdate.cfm (last visited June 29, 2006).

136 U.S. DEP'T OF AGRIC., FOREST SERV., OVERVIEW OF FY 2004 PRESIDENT'S BUDGET, SUMMARY OF FUNDING FOR THE NATIONAL FIRE PLAN, app. G, http://www.fs.fed.us/budget_2004/documents/Appendix_G_NFP.pdf.

137 HEALTHY FORESTS INITIATIVE, *supra* note 33, at 4.

138 Consolidated Appropriations Act, 2005, Pub. L. No. 108-447, tit. 2, 118 Stat. 2809, 3076 (2004).

B. Recommended Course of Action

It is within the context of the communities at risk that an opportunity exists to begin a comprehensive approach that will address the need to find a balance between the objectives of the CAA and the HFRA. The use of fire for forest management costs approximately $25 per acre, while hand treatments can cost $1500 per acre in complex landscapes.[139] These higher costs per acre are reflected in the WUI lands, where fewer acres are treated with more "bang for the buck." But not all acres are equal. The need for continued progress in reducing hazardous-fuel loading near communities was most recently noted by the Western Governors' Association.[140] The Association noted that while progress has been made to address the adverse effects of wildfire on western communities, the federal agencies are still not addressing the areas most in need of action: WUI lands.[141]

Based on this data, and a desire to meet the multiple objectives of the CAA and the HFRA, I believe there are three fundamental changes that need to occur to better address the health and safety of individuals who live in the WUI and individuals who are downwind from the adverse effects of smoke.

1. Congressional Understanding and Acceptance of Weighted Acreages

Congress and the administrative agencies are partial to having accomplishments—here "acres treated"—expressed in measurable ways. But, not all acres are created equally. Thus, a weighted measurement must be adopted in order to better understand the positive effects when difficult and expensive WUI acres are treated. An algorithmic formula provides a more equal weight to those acres treated. This formula would be adopted to conform to the following measurements:

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139 See *supra* note 108 and accompanying text.

140 Press Release, Western Governors' Ass'n, Western Governors Release Advisory Committee's Review of 10-Year Wildfire Strategy, Next Steps (Dec. 16, 2004), *available at* http://www.westgov.org/wga/press/10-year-rpt.htm.

141 FOREST HEALTH ADVISORY COMM., WESTERN GOVERNORS' ASS'N, REPORT TO THE WESTERN GOVERNORS ON THE IMPLEMENTATION OF THE 10-YEAR COMPREHENSIVE STRATEGY 4-5 (2004), http://www.westgov.org/wga/ initiatives/fire/ tempe-report04.pdf.

Gross Acres Treated	WUI/ Non-WUI Acres Treated	Community at Risk	Economic Indicators	Attainment/ Non-Attainment Air Basin	Class I Airshed	Biomass/ Burn	Adjusted Acres Treated

The actual number of acres would be entered into the first column. The second column would split the WUI and Non-WUI acres apart that were treated in the project area. Based on algorithms,[142] higher weights would be given if the area treated was in an identified Community at Risk that is located near or adjacent to non-attainment air basins and Class I airsheds. In addition, on the national scale, economic indicators would be given for areas of the country based on cost-of-living indices. Finally, if a project area is located in or near a non-attainment air basin and/or Class I airshed and the hazardous fuels are biomassed, a higher value would be given than if the hazardous fuels were reduced through fire activity. Those values would be multiplied together to come to a net WUI acres and Non-WUI acres treated. Those two net acres would be added together to provide the adjusted acreage, which would be reported to Congress.

For example, suppose a forest treats 1000 acres with 750 in WUI lands (all biomassed) and the remaining 250 in non-WUI lands (all burned). The WUI acreage is in a community at Risk with a weighted mean of 1.2 and the Economic Indicators identified that it is 1.15 times more expensive than the national average. The project area, all 1000 acres, is near a non-attainment area with a determined value of 1.35 (attainment areas are given 1.0) and a Class I airshed is adjacent to the forest with a determined value of 1.25. Through algorithms it is determined that if fuels are reduced by biomassing, the treatment has a weighted mean of 1.4; and if the area is burned, as in this instance, it is given a value of 0.1. When inserted into the table, these calculations yield an Adjusted Acreage Treated of approximately 2596 acres.

142 Named after the Iranian mathematician Al-Khawarizmi, the word means a computable set of steps to achieve a desired result. Dictionary of Algorithms and Data Structures, http://www.nist.gov/dads (click on "algorithm") (last visited June 29, 2006). Technically, an algorithm must reach a result after a finite number of steps, thus ruling out brute-force search methods for certain problems; however, some might claim that brute-force search was also a valid (generic) algorithm. AMERICAN HERITAGE COLLEGE DICTIONARY 34 (3d ed. 2000).

Gross Acres Treated	WUI/ Non-WUI Acres Treated	Community at Risk (Value = 1.2)	Economic Indicators (Value = 1.15)	Attainment/ Non-Attainment Air Basin (Value = 1.4)	Class I Airshed (Value = 1.25)	Biomass/ Burn (Values = 1.4/0.1)	Adjusted Acres Treated
1000	750/250	900/300	1035/345	1449/483	1811/604	2536/60	2596

This would result in the more complex, interwoven private-public lands being treated more readily. With one-to-one measurement, agencies often are forced to treat large, remote acreages to get as many acres accomplished at the lowest possible cost per acre. While the current method provides large numbers to Congress, it results in criticism, as evidenced by the Western Governors' Association, that agencies are not focusing on the lands that truly need treatment.

2. Wildland-Fire Use and Grant Program

As previously noted, in fiscal year 2004, 120,000 acres of hazardous-fuels-reduction work occurred through wildland-use fires.[143] In many instances, once the decision is made to allow a wildland-use fire to occur, very few resources objectives are set (i.e., overall size, intensity of the fire). These fires are allowed to burn unabated until air quality, haze, or visibility issues arise. At this point, the agencies undertake aggressive action to suppress the wildland-use fire.

To better implement the use of wildland-use fires as a tool in the reduction of hazardous fuels, objectives and size limits should be established prior to the decision being made to allow the fire to continue. This would allow for a determined outcome on the landscape, and multiple wildland fires could be coordinated to meet the overall goal of reducing hazardous fuels.

It should be recognized, that these objectives are human parameters, and nature will not always cooperate with such lofty goals. In instances where the fire takes an unplanned course of direction from a controlled wildland-use fire to a wildland fire, that change may result in a violation of the CAA.[144] In certain instances, it is likely that the Air Resources Board would be required to impose fines. Currently, these funds go directly into

[143] HEALTHY FORESTS INITIATIVE, *supra* note 33, at 2.

[144] The two most costly fires in American history were initially controlled burns that spread and became major catastrophic fires—the Cerro Grande and Outlet fires that occurred near and in the town of Los Alamos, New Mexico. Pyne, *supra* note 8, at 5.

the coffers of the Boards and are appropriated toward future monitoring needs.[145]

Thus, rather than having these dollars go toward monitoring an already known unhealthy situation, these dollars should be set aside for seed/grant money to encourage further investment in the use of biomassing tools and techniques. Biomassing is the more expensive endeavor as previously noted, but it utilizes wood products in manners that do not require the use of fire and its subsequent adverse effects. Establishing a grant program for biomass treatments, with a split of eighty percent for grants and twenty percent for overhead/enforcement, would result in further encouragement of another tool to address the twin goals of the CAA and HFRA.

3. Local Taxation

> *Reducing hazardous fuels near communities may reduce, but not eliminate, wildlife [sic] risks to these communities. Some risk is inherent to communities that exist in fire-dependent ecosystems*.[146]

When people purchase homes in the WUI environment, they should be aware that they have a responsibility for the costs of such investments. Such an acknowledgment would minimize the likelihood that if a wildfire occurs in their area they have provided the home with a safe-zone. Currently, California requires sellers to disclose that the purchaser is acquiring a home that could be subject to catastrophic fire, which is coupled with a local tax structure to optimally result in an informed buyer.[147] In addition, starting in 2005, California requires homeowners to clear brush and flammable vegetation a minimum of 100 feet from their homes.[148] Failure to comply could subject homeowners to fines up to $500.[149]

Tax structures should be established whereby communities can use local taxes to support treatments of lands located between the private and public ownership in the community. Homes with defensible space and fire-resistant roofs would be taxed at a

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[145] CAL. HEALTH & SAFETY CODE § 42311 (West 2006).

[146] Urban Interface Communities Within the Vicinity of Federal Lands that Are at High Risk from Wildfire, 66 Fed. Reg. 751, 751 (Jan. 4, 2001).

[147] *See* CAL. PUB. RES. CODE § 4136 (West 2006).

[148] CAL. PUB. RES. CODE § 4291(b) (West 2006).

[149] *Id.* § 4291.1.

lower level than those whose owners refuse to reduce the amount of hazardous fuels and retain their cedar shake roof. The federal tax structure should also provide a deduction for these taxes as a preventative measure, rather than relying on funding after the disaster, which unfortunately is the typical response.

This locally imposed tax, as well as any fines collected due to the new state law on defensible space, should be applied toward treatment of acres in the community, and could be managed through the local Fire Safe Councils located in many of the identified communities at risk. This would result in an overall net benefit to both the local landowner and the American taxpayer if the catastrophic event were avoided.

IV.

CONCLUSION

As population growth continues and people continue to move out into the WUI, the conflict over the public's contradictory expectations between clean air and a safe environment will continue. Those who live in the WUI will have an expectation that their properties will coexist within an environment that is not subject to catastrophic wildfire, while those downwind expect that their overall air quality is not impacted by land-management techniques. There is also an expectation that this will be done without further impacting their tax dollars. Unfortunately, the reality will be harder to accept unless some basic expectations at the congressional level are readjusted. Congress must gain a better understanding of the importance of undertaking efforts within the WUI that will substantially benefit the public. This, along with additional incentives to encourage entrepreneurs to enter into the marketplace to treat lands, as well as some accountability by property owners, may work to overcome almost 100 years of fuel buildup on public lands as more and more people decide to live adjacent to the Great Outdoors.